



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,307	11/18/2003	Dirk N. Yerian	36110	6918

116 7590 09/08/2005

PEARNE & GORDON LLP  
1801 EAST 9TH STREET  
SUITE 1200  
CLEVELAND, OH 44114-3108

EXAMINER
----------

EWALD, MARIA VERONICA

ART UNIT	PAPER NUMBER
----------	--------------

1722

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/716,307	YERIAN ET AL.	
	Examiner	Art Unit	
	Maria Veronica D. Ewald	1722	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____.  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/18/03</u> .  | 6) <input type="checkbox"/> Other: ____.                                    |

*Q.*

## DETAILED ACTION

### *Election/Restrictions*

13. Restriction to one of the following inventions is required under 35 U.S.C. 121:
- I. Claims 1 - 6, drawn to a material processing system, classified in class 425, subclass 162.
  - II. Claims 7- 27, drawn to a powder preheating system, classified in class 425, subclass 257.
  - III. Claim 28, drawn to a control system for a vibratory feeder, classified in class 710, subclass 1+.

Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In this case, the combination as claimed does not require the particulars of the subcombination as claimed because the processing station to preheat the powdered material need not include a hopper. The subcombination has separate utility such as heating a thermoplastic resin prior to extrusion or injection molding.

In addition, inventions II and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case, the different inventions need not be used in conjunction

Art Unit: 1722

with one another. The control system for the vibratory feeder can be used with anything else that requires an electrical control system and need not result in monitoring the amount of powdered material to be preheated.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Atty. Una Schumacher on August 30, 2005 a provisional election was made without traverse to prosecute the invention of Group II, claims 7 – 27. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1 – 6, 28 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Claim Rejections - 35 USC § 102***

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by Severiens (U.S. 5,286,437). Severiens teaches a powder preheating system comprising: a first heated tube having an auger screw for moving a powdered material through the first heated tube while heating the powdered material to a predetermined temperature (item 3,7 – figure 1; column 3, lines 17 – 19, 21 – 22), and a hopper coupled to the first

Art Unit: 1722

heated tube and staged for dispensing the heated powdered material (item 2 – figure 1; column 3, lines 34 – 35).

Claim 26 is rejected under 35 U.S.C. 102(b) as being anticipated by Severiens.

Severiens teaches a powder preheating system comprising: at least one heated tube for heating powdered material flowing through the tube (item 3,7 – figure 1; column 3, lines 17 – 19, 21 – 22), means for feeding the powdered material from a storage bin to the at least one heated tube (item 5 – figure 1; column 3, lines 44 – 45, 50 – 51), and means for dispensing the heated powdered material from the at least one heated tube (item 9 – figure 1; column 4, lines 12 – 13).

***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 – 9, 11 and 14 – 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Severiens in view of Arpajian, et al. (U.S. 3,741,699), further in view of Seta, et al. (U.S. 6,824,374). Severiens teaches the characteristics previously described but does not teach that there are two additional heated tubes included in the powder preheating apparatus.

Art Unit: 1722

In a method to pre-plasticize thermosetting resin powder, Arpajian, et al. teach the use of three extrusion cylinders (items 46, 48 and 50 – figure 2; column 3, lines 9 – 10). The resin powder is fed to the cylinders from a common hopper (column 3, lines 13 – 14). Each of the cylinders includes a screw (items 46B, 48B, and 50B) and is heated by jacketed heated fluid mediums (column 3, lines 18 – 23). The use of multiple tubes or cylinders shortens cycle time and provides for a more efficient means of dispensing material (column 2, lines 12 – 14). This reads on the Applicant's claim that the powder preheating apparatus be comprised of a second heated tube coupled to the first heated tube. In addition, this reads on the Applicant's claim that the first and second heated tubes are heated via first and second water jackets having heated water flowing therethrough, the first and second water jackets substantially surrounding a circumference of the first and second heated tubes; and that the powder preheating system be further comprised of a third tube coupled to the first and second heated tubes, which is also heated via a water jacket substantially surrounding the third tube.

In a method to plasticate thermoplastic resins, Seta, et al. teach that the resin is sent to the plasticating unit then stored in a buffering unit. In operation, the resin material is extruded and melted in the plasticating unit (item 6 – figure 2) and then fed to the buffering unit and reserved there (item C – figure 2; column 5, lines 57 – 63). The resin material is then sent to a third reservoir (item 4 – figure 2) through a connecting passage (item 12 – figure 2) which measures out the quantity of resin desired per shot to be injected into the mold (column 6, lines 1 – 6). When the desired quantity of resin is received in the reservoir, the mold (not shown) is opened and the resin is delivered

Art Unit: 1722

through the nozzle (item 5 – figure 2; column 6, lines 7 – 12). Though Seta, et al. is not teaching the use of the apparatus with powders, the apparatus performs the function of kneading, heating and storing the resin prior to any further processing. This reads on the Applicant's claim that the first and second tubes are used for recirculating the powdered material and that the third tube be used to store the powdered material, of which the third tube has a normally closed gate coupled to its bottom portion.

It would have been obvious at the time of the Applicant's invention to one of ordinary skill in the art to modify the apparatus of Severiens with the multiple tubes of Arpajian and the sequence of moving the material as taught by Seta, et al. for the purposes of shortening cycle time thereby resulting in a more efficient means of dispensing material as taught by Arpajian (column 2, lines 12 – 14) and for providing adequate kneading, storing and measuring of the desired material as taught by Seta, et al., which also results in shortened molding time (column 2, lines 29 – 30).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Severiens in view of Arpajian, et al., further in view of Seta, et al., and further in view of Morgan (U.S. 6,380,517). Severiens, Arpajian, and Seta, et al. teach the characteristics previously described but do not teach that the water jackets are baffled.

In a method to heat-treat solid particulates under vacuum conditions, Morgan teaches the use of heated gas. The gaseous exhaust conduit has a plurality of baffles connected to the inner walls by welds which are offset and spaced from each other along the horizontal axis to provide a tortuous path for the gases flowing therethrough

Art Unit: 1722

and for distributing such gases (column 4, lines 30 – 34). Though Morgan teaches the use of a gaseous medium, the baffles are provided to maximize distribution of the gases used in a system to heat particulate matter.

Thus, it would have been obvious at the time of the Applicant's invention to one of ordinary skill in the art to modify the apparatus of Severiens with the multiple tubes of Arpajian, the sequence of moving the material as taught by Seta, et al. and the baffles of Morgan for the purpose of distributing the water through the jackets to maximize its distribution therethrough as taught by Morgan (column 4, lines 33 – 34).

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Severiens in view of Arpajian, et al., further in view of Seta, et al., and further in view of Takiura (U.S. 3,891,372). Severiens, Arpajian, et al. and Seta, et al. teach the characteristics previously described but do not teach that the powder preheating apparatus have a horizontal auger screw coupled to the three heated tubes.

In a method to cross-link polymers, Takiura teaches the use of a horizontal auger screw (item 21 – figure 7) which is connected to the first and second tubes (items 31 and 31' – figure 7) and the third tube or accumulator (item 61 – figure 7) through passageways (items 28 and 33 – figure 7). The horizontal auger screw feeds the resin material into each reaction chamber, which can then be subsequently fed into the accumulator (column 8, lines 45 – 49). Common to the three tubes, and controlling the resin feed, there are transfer valves (items 29 and 35 – figure 7). The transfer valves control the flow of resin from the auger screw to the reaction chambers and the



accumulator (column 7, lines 6 – 7; column 9, lines 12 – 17). In addition, the horizontal auger screw is the main feed for the three tubes, of which the resin subsequently leaves the tubes and the accumulator to be further processed in the molding die (column 7, lines 35 – 36; column 8, lines 26 – 30). This reads on the Applicant's claim that there is a horizontal auger screw coupled to the first, second and third tubes, which is employed to move the powdered material among the three tubes and also has a flight restrictor on a portion of the horizontal auger screw to control an amount of powdered material moving between the first, second, and third tubes.

It would have been obvious at the time of the Applicant's invention to one of ordinary skill in the art to modify the apparatus of Severiens with the multiple tubes of Arpajian, the sequence of moving the material as taught by Seta, et al. and the horizontal auger screw and transfer valve of Takiura for the purposes of moving and controlling the movement of the powder material among the heated tubes prior to subsequent processing as taught by Takiura.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Severiens in view of Arpajian, et al., further in view of Seta, et al., and further in view of Wallace (U.S. 5,836,721). Severiens, Arpajian, et al. and Seta, et al. teach the characteristics previously described but do not teach the use of a vacuum conveyor.

In a method to efficiently move powder material to coat fasteners, Morgan teaches the use of a vacuum conveyor. Powder flows from a powder feeder (item 30 – figure 6) through the powder feeder delivery tube (item 36 – figure 6) to contact

Art Unit: 1722

fasteners on the conveyor (item 12 – figure 6). The powder-coated fasteners then contact airstreams, which remove excess powder via a vacuum using a conventional nozzle (column 6, lines 45 – 50). Any excess powder is then directed into the powder recirculation conduit (column 6, lines 52 – 53; item 70 – figure 6). This reads on the Applicant's claim that the powder preheating apparatus consist of a vacuum conveyor coupled to a top portion of the third tube to draw the powdered material from a storage container into the third tube. Morgan further teaches that the use of the pressurized air results in an improvement in the consistency in quality of the powder flow (column 7, lines 8 – 10).

It would have been obvious at the time of the Applicant's invention to one of ordinary skill in the art to modify the apparatus of Severiens with the multiple tubes of Arpajian, the sequence of moving the material as taught by Seta, et al. and the vacuum conveyor of Morgan for the purpose of improving the consistency in the quality of the powder flow (column 7, lines 8 – 10).

Claims 17 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Severiens in view of Arpajian, et al., further in view of Seta, et al., and further in view of Ladts, et al. (U.S. 4,580,698). Severiens, Arpajian, et al. and Seta, et al. teach the characteristics previously described but do not teach the use sensors on any of the heated tubes.

In a method to control the output from a feeder system placed upon a conveyor means, or output fed a processing device, Ladts, et al. teach the use of level/weight

sensors (column 1, lines 7 – 10; column 5, lines 13 – 15). This reads on the Applicant's claims that there are sensors located on the third tube and at least one of the first or second tubes to sense when the powdered material is at or below a predetermined level. The reference further teaches that a level sensor with a transducer is utilized to detect the quantity of bulk material on the conveyor (column 5, lines 15 – 17). This allows the precise measuring of bulk material as accurately as possible (column 5, lines 20 – 22).

It would have been obvious at the time of the Applicant's invention to one of ordinary skill in the art to modify the apparatus of Severiens with the multiple tubes of Arpajian, the sequence of moving the material as taught by Seta, et al. and the level sensors of Ladts, et al. for the purpose of precisely measuring the bulk material desired for further processing as taught by Ladts, et al. (column 5, lines 20 – 22).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Severiens in view of Wallace. Severiens teaches the characteristics previously described but does not teach the use of a vibration chute.

In a method to efficiently move powder material to coat fasteners, Wallace teaches the use of a vibratory feeder coupled to the bottom of a supply hopper (column 5, lines 31 – 32, 34 – 35). The reference further teaches that the vibration of the feeder allows the flow from the feeder to be regulated (column 5, lines 34 – 35). This reads on the Applicant's claim that a vibration chute be coupled to the hopper to facilitate flow of the powdered material from the hopper.

It would have been obvious at the time of the Applicant's invention to one of ordinary skill in the art to modify the apparatus of Severiens with the vibratory feeder of Wallace for the purpose of allowing the flow from the feeder to be regulated as taught by Wallace (column 5, lines 34 – 35).

Claims 20 – 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Severiens in view of Rudolph (U.S. 4,684,488). Severiens teaches the characteristics previously described but does not teach the use of scales or a mixer with which to add colorant to the powder.

In a method to add pigments to solid plastic particles, Rudolph teaches the use of dosaging scales (column 3, lines 1 – 2, 10 – 11). Components of the mixture to be fed to the extruder are comprised of the plastic particles, color concentrates, fillers, and pigments in powder form (column 3, lines 2 – 4). The components can be fed individually or premixed to a supply hopper (item 5 – figure 1; column 3, lines 4 – 5). Prior to being fed to the hopper, there are dosaging scales, differential scales, and a dosaging worm to portion or measure out desired quantities of the components (column 3, lines 8 – 9). There are dosaging scales and dosaging worms attached to the respective supply hoppers of the individual components (column 3, lines 10 – 12). This reads on the Applicant's claims that the powder preheating apparatus be further comprised of a first scale to measure an amount of powder to be colored; a second scale to measure an amount of powdered material dispensed from the hopper; a mixer to mix a pigment with the powdered material and a pigment receptacle to meter an

Art Unit: 1722

amount of pigment into the mixer; and means for coloring the powdered material.

Rudolph further teaches that the use of the control system with the dosaging scales and worms allows the adjustment of the constituents and to correct any deviations from the desired pre-determined sample (column 2, lines 10 – 13).

It would have been obvious at the time of the Applicant's invention to one of ordinary skill in the art to modify the apparatus of Severiens with the colorant control system of Rudolph for the purpose of enabling the adjustment of the constituents (i.e., pigments, colorants) and to correct any deviations from the desired pre-determined sample or product to be processed as taught by Rudolph (column 2, lines 10 – 13).

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Severiens in view of Wallace. Severiens teaches the characteristics previously described but does not teach the use of a portable electronic device.

In a method to efficiently move powder material to coat fasteners, Wallace teaches that there is a photoelectric sensor attached to the feeder (item 30 – figure 3). When the sensor detects that there is an insufficient amount of powder in the bottom of the feeder, it causes the auger to move in the powder block and force more powder to drop into the feeder (column 4, lines 47 – 50). Furthermore, the reference teaches that the photoelectric sensor is key in ensuring that the level of powder material is maintained consistently which also ensures the consistency of the powder flow, such that the flow of powder to the bottom of the feeder is greater than that which exits through the delivery tube (column 4, lines 56 – 60). This reads on the Applicant's claim

Art Unit: 1722

that the powder preheating apparatus be further comprised of a portable electronic device to operate the system.

It would have been obvious at the time of the Applicant's invention to one of ordinary skill in the art to modify the apparatus of Severiens with the photoelectric sensor of Wallace for monitoring the level of powder material fed to the hopper and ensuring that the auger screw moves powder into the hopper if the level is below the required amount, which ensures that the powder flow is always consistent as taught by Wallace (column 4, lines 47 – 50, 56 – 60).

### ***Conclusion***

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Veronica D. Ewald whose telephone number is 571-272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

Art Unit: 1722

For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

Should you have questions on access to the Private PAIR system, contact the

Electronic Business Center (EBC) at 866-217-9197 (toll-free).



MVE

Joseph S. Del Sole

9/5/05

Joseph S. Del Sole